U.S. Energy Information Administration

‹ Countries

Korea, South

Last Updated: April 1, 2014 (Notes)

full report

Overview

South Korea relies on imports to meet about 97% of its energy demand as a result of insufficient domestic resources, and the country is one of the world's leading energy importers.

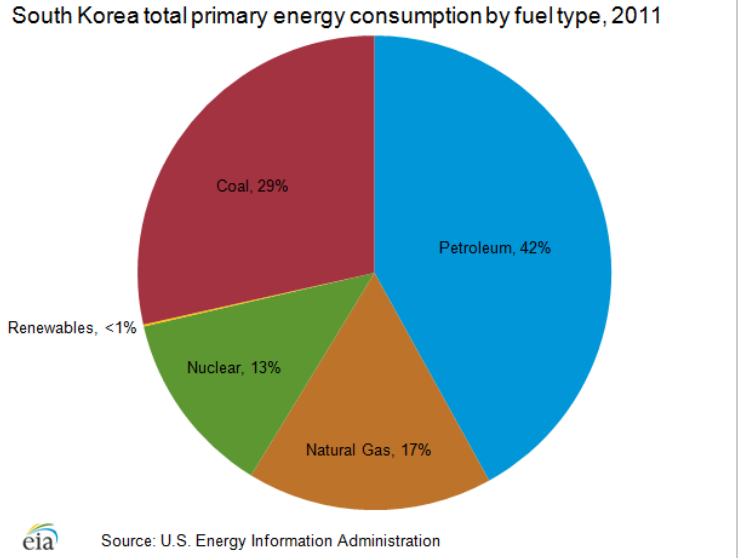
The U.S. Energy Information Administration (EIA) estimates that South Korea was the world's ninth-largest energy consumer in 2011. Korea is one of the top energy importers in the world and relies on fuel imports for about 97% of its primary energy demand because the country lacks domestic energy reserves. In 2013, the country was the second-largest importer of liquefied natural gas (LNG), the fourth-largest importer of coal, and the fifth-largest net importer of total petroleum and other liquids. South Korea has no international oil or natural gas pipelines and relies exclusively on tanker shipments of LNG and crude oil. Despite its lack of domestic energy resources, South Korea is home to some of the largest and most advanced oil refineries in the world. In an effort to improve the nation's energy security, oil and gas companies are aggressively seeking overseas exploration and production opportunities.

South Korea's highly developed economy drives its energy consumption, and economic growth is fueled by exports, most notably exports of electronics and semiconductors. The country also contains one of the world's top shipbuilding industries. Gross domestic product (GDP) grew by 2.8% in 2013, up from 2% in 2012. The government anticipates even higher GDP growth in 2014 of 3.8% on the back of rising exports and recovering economic growth in other developed countries. South Korea's economic growth following the 2008 global financial crisis remained relatively resilient compared to other developed country economies.

Although petroleum and other liquids accounted for the largest portion (41%) of South Korea's primary energy consumption in 2012, its share has been declining since the mid-1990s, when it reached a peak of 66%. This trend is attributed to the steady increase in natural gas, coal, and nuclear energy consumption. The government originally planned to increase the nuclear share of total energy consumption in the next 20 years as planned reactors come online, although the most recent energy policy, unveiled at the end of 2013, limits the country's reliance of nuclear energy in the power sector over the long term. South Korea is attempting to diversify its fuel portfolio to meet higher energy consumption and to moderate its nuclear power generation targets following Japan's Fukushima disaster and South Korea's problems with false safety certifications of nuclear parts in late 2012. To help balance a more moderate nuclear generation growth goal and offset some fossil fuel imports, the government is also promoting greater demand-side management, energy

efficiency tactics, and renewable energy supplies.

Source: U.S. Department of State



Petroleum and other liquids

South Korea has a large oil refining sector, but the country relies almost entirely on crude oil imports to fuel its refineries.

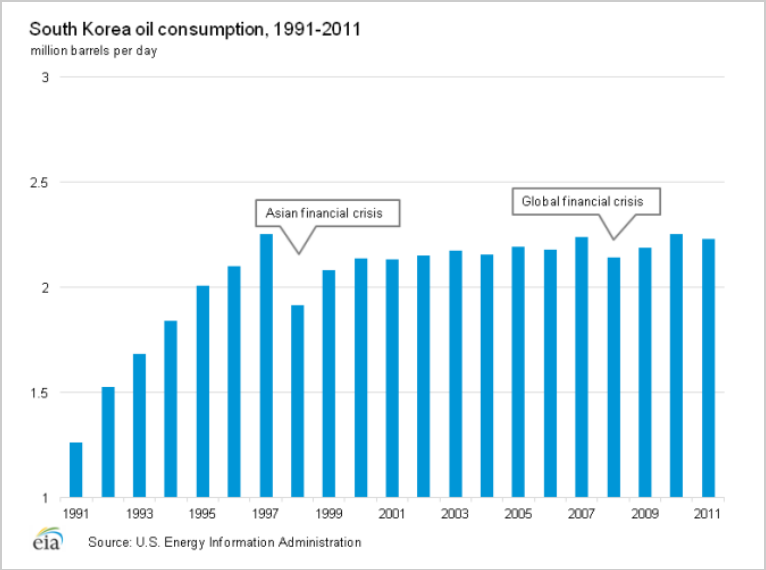
Overview

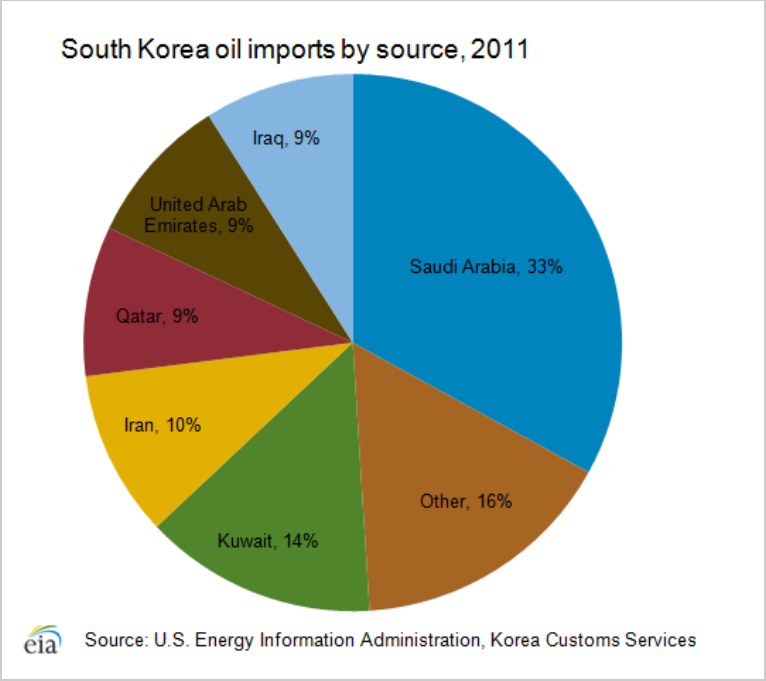
South Korea consumed more than 2.3 million barrels per day (bbl/d) of petroleum and other liquids in 2013, making it the ninth-largest consumer in the world. According to the Korea National Oil Company (KNOC), Korea has a small amount of domestic oil reserves, but the country relies significantly on crude oil imports to meet its demand. A majority of South Korea's total oil production of 60,000 bbl/d is based on refinery processing gains and a small portion of biofuel production.

According to the *Oil & Gas Journal* (*OGJ*), South Korea maintains 3 of the 10 largest crude oil refineries in the world, allowing South Korea to be one of Asia's largest petroleum product exporters. According to Global Trade Atlas and Facts Global Energy (FGE), South Korea exported about 1.2 million bbl/d of refined oil products in 2013, mostly in the form of middle distillates such as gasoil and jet fuel. Because of increasing demand from Asia during the past decade, South Korea's exports of refined products have grown at a rapid rate.

South Korea's oil consumption rates have fluctuated alongside its economy. Oil consumption grew at a rapid pace with economic growth in the 1990s, fell following the Asian Financial Crisis of 1997, rose steadily until 2007, but dipped during the global economic downturn in 2008. Oil demand gradually rose from 2008 to 2013. Naphtha, which is used for the country's sizeable petrochemical and industrial sectors, accounts for about 44% of total oil product demand and is the primary driver of domestic demand growth, according to FGE. South Korea's oil demand growth outside of the petrochemical sector is limited in the long term because of its declining population growth, greater energy efficiency measures, and competition from other fuels such as natural gas, nuclear, renewable sources.

In 2013, South Korea imported nearly 2.5 million bbl/d of crude oil, making it the fifth-largest importer in the world. South Korea is highly dependent on the Middle East for its oil supply, and the region accounted for more than 87% of South Korea's 2013 crude oil imports, according to Global Trade Atlas. Saudi Arabia was the leading supplier and the source of over a third of South Korea's imports, followed by Kuwait at 16% of total crude oil imports. South Korea reduced its crude oil purchases from Iran, from 10% in 2011 to 5% in 2013. South Korea halted shipments from Iran for two months in 2012 to comply with sanctions imposed by the United States that impeded Iran's ability to sell crude oil. After showing a good faith effort to reduce their volumes, South Korea was granted a waiver in mid-2012 and resumed imports from Iran, but at a lower level than before the sanctions. Negotiations between Iran and six global powers at the end of 2013 allowed South Korea and other buyers to maintain current import levels. Other Middle Eastern suppliers have made up for the lost imports from Iran.





Sector organization

The Korea National Oil Corporation (KNOC) is a state-owned oil company and the largest entity in South Korea's upstream sector, with 3.2 million barrels of ultra-light crude (condensates) domestic reserves. In addition, KNOC, through both acquisitions of overseas companies and investments with major international and national oil companies, produced 231,000 bbl/d and held 1.3 billion barrels of oil equivalent of oil and gas reserves from overseas assets in 2012.

Korea's downstream sector is home to several large international oil companies including SK Energy, the nation's largest international oil company (IOC). SK Energy holds approximately 34% of the petroleum product market (excluding LPGs), followed by GS Caltex, S-Oil, and Hyundai Oilbank. These corporations have historically focused on refining, but some have put increasing emphasis on crude extraction projects in other countries. SK Energy also owns the largest stake in the Daehan Oil Pipeline Corporation (DOPCO), which exclusively owns and manages Korea's oil pipelines, although most of the country's oil is distributed by tankers or tank trucks.

To compensate for the lack of domestic oil reserves and to secure more crude oil, both South Korea's state-owned and private oil companies engage in many overseas exploration and production (E&P) projects. The Korea Petroleum Association (KPA) started the Korea-Oil Producing Nations Exchange (KOPEX) in 2006 to maintain good relations with oil producing countries and to offer technology training to producing countries in the downstream sector. In addition, the South Korean government provides financial support for the country's upstream companies to win bids overseas through the Special Accounts for Energy and Resources (SAER), administered by KNOC, for support on E&P projects. To be less dependent on foreign oil imports, the Ministry of Knowledge Economy (MKE) has established oil self-sufficiency targets based on domestic and overseas production levels each year since 2008 for South Korean companies, although almost none of South Korea's overseas production has been shipped back to South Korea. South Korea received its first crude oil delivery from overseas production at the end of 2013.

Exploration and production

After beginning exploration in the 1970s, South Korea has discovered one commercially producing field among its Ulleung, Yellow, and Jeju Basins so far. Discovered in 1998, Donghae-1, Block 6-1 in the Ulleung Basin, has total proven reserves of 203 billion cubic feet (Bcf) of natural gas (see Natural Gas section for further discussion) and 3.2 million barrels of ultra-light crude (condensates). While natural gas production from Donghae-1 began in November 2004, oil production did not begin until 2010 after further exploration and discovery. In 2012, KNOC produced 1,000 bbl/d of ultra-light crude (condensates), representing a negligible portion of its 2.3 million bbl/d total petroleum consumption, nearly all of which was imported. South Korea, which has been exploring at depths of less than 500 feet, plans to explore its domestic basins at depths greater than 1,000 feet.

Although new discoveries might improve domestic oil prospects, overseas E&P plays a more essential role in Korea's oil industry. The Korean government has encouraged private E&P overseas through tax benefits and the extension of credit lines to IOCs by the Korea Export-Import bank, and also provided diplomatic aid in overseas negotiations. As of February 2013, KNOC was invested in 226 projects, 94 of which are in the production stage, in 24 countries.

By purchasing stakes in North American oil sands and shale formations, KNOC has diversified its market to include shale and tight formations of oil and gas. Through the company's oil acquisition of Harvest Energy in Canada, KNOC obtained the lease for BlackGold oil sands, a site with an estimated 259 million barrels of recoverable bitumen reserves. KNOC also acquired two other overseas oil companies in 2009—SAVIA from Peru and Sumbe from Kazakhstan—and obtained a majority share in UK-based oil company Dana Petroleum in September 2010.

In the United States, KNOC has an interest in producing projects in Ankor and Northstar in the Gulf of Mexico, Old Home field in Alabama, and Parallel project in Texas and New Mexico. In 2011, KNOC acquired a 23.7% interest in the Eagle Ford shale gas formation, producing 25 million barrels of oil equivalent per day of oil, gas, and natural gas liquids (NGL). The NOC's purchases in the past decade have created a debt accumulation, and the government is keen to reduce overall debt ratios (total debt to total assets) for 38 state-owned companies from a current 220% to 197% by 2017. KNOC has discussed offloading some of its recently purchased global oil assets.

KNOC's global exploration projects

Source: Korea National Oil Corporation

KNOC's domestic exploration blocks

Source: Korea National Oil Corporation

Downstream and refining

According to *OGJ*, South Korea had over 2.9 million bbl/d of crude oil refining capacity at six

facilities as of late 2013. South Korea has the sixth-largest refining capacity in the world. The country's three largest refineries are owned by SK Innovation, GS Caltex, and S-Oil, the latter of which is partially owned by Saudi Aramco.

South Korea's Oil Refineries, as of December 2013

Owner	Location	Capacity (barrels per day)
SK Innovation	Ulsan	840,000
GS Caltex Corp.	Yeosu	775,000
S-Oil Corp.	Ulsan	669,000
Hyundai Oil Refinery Co.	Daesan	390,000
SK Innovation	Inchon	275,000
Hyundai Lube Oil	Daesan	9,500
Total		2,958,500

Source: Oil & Gas Journal

Korean refineries are increasingly producing light, clean products as a result of refinery upgrades that have taken place in recent years. The increased sophistication of the Korean refining market is likely to increase capacity utilization, which is already high for some refineries. As a result, South Korea is expected to remain a leading refiner in Asia, with significant exports to China, Singapore, and Indonesia. Korean refiners are using their expertise in capacity expansion and teaming up with other oil companies to construct plants in other regions of the world, especially in the Middle East. Upcoming Korean refinery projects include additional units at the Inchon and Daesan refineries, which will increase capacity by another 245,000 bbl/d in 2014, according to FGE. These units are designed to handle refining of petroleum condensates, primarily from the Middle Eastern oil liquids supply.

South Korea is also a major producer of petrochemicals, with 7.3 million tons per year of ethylene capacity, according to the Korea Petrochemical Industry Association. Most of the country's petrochemical plants are integrated into larger refineries such as Inchon, Ulsan, and Daesan. South Korea is home to the single largest aromatics (includes petrochemicals such as benzene and its derivatives) production site in the world, owned by GS Caltex. Toyo Engineering, a Korean company, is constructing an ethylene plant in Ulsan with a capacity of nearly 300,000 tons per year that will come online at the end of 2014. Also, S-Oil announced plans to spend over $7 billion from 2014 through 2017 to construct heavy oil upgrading and petrochemical units at its current plants in Ulsan.

Petroleum and other liquids dependence and outlook

According to the Korea Energy Economics Institute (KEEI), petroleum and other liquids will account for about 34% of total primary energy consumption by 2017, down from EIA's estimate of 41% in 2012, because of an expected increase in the use of coal, natural gas, and nuclear power. Other factors affecting long-term demand include more stringent energy efficiency standards and an aging and shrinking population. In response to South Korea's new energy demands, oil companies have not only upgraded refining facilities and increased upstream investment, but they have also begun investing in alternative energy

projects.

KNOC held state crude oil and petroleum products inventories, including international joint stockpiles, of 135 million barrels at nine facilities with 146 million barrels of capacity in December 2013. KNOC has leased out about 44.3 million barrels of storage to other countries through joint stockpiles. As part of South Korea's efforts to create a major liquids storage and trading hub in Asia, KNOC, through joint ventures with other firms, is in the process of building the country's first three commercial oil storage facilities holding a total capacity of 36.6 million barrels. The first facility, located in Yeosu in the southwestern region, came online in 2013 with 8.2 million barrels of capacity. The other two facilities will be built in Ulsan in the southeastern region by 2017.

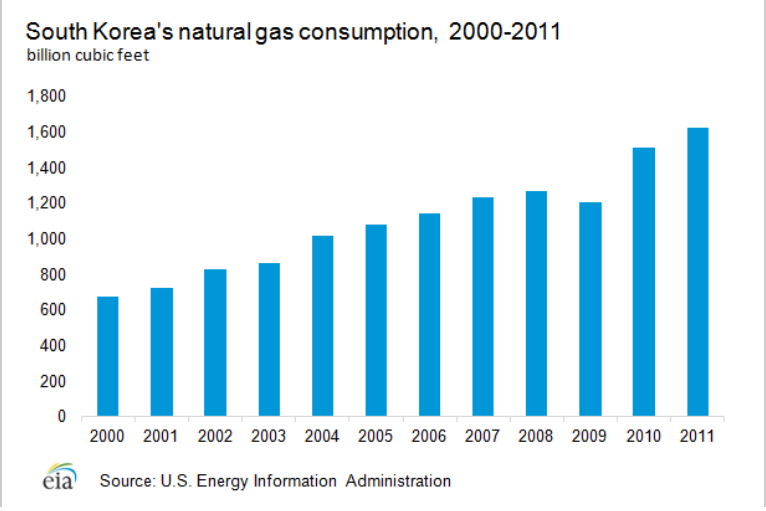
Natural gas

South Korea is the second-largest importer of liquefied natural gas in the world behind Japan.

South Korea relies on imports to satisfy nearly all of its natural gas consumption, which has nearly doubled over the previous decade. While the country possessed discovered proven reserves of 203 billion cubic feet (Bcf) as of January 2014, according to OGJ, domestic gas production is negligible and accounts for less than 2% of total consumption. South Korea does not have any international gas pipeline connections and must therefore import all gas via LNG tankers. As a result, although South Korea is not among the group of top gas-consuming nations, it is the second-largest importer of LNG in the world after Japan.

Consumption

South Korea consumed 1.8 Trillion cubic feet (Tcf) of natural gas in 2012, which was an increase of more than 163% from 2000. The city gas network, serving residential, commercial, and industrial consumers, accounted for slightly more than half of the natural gas sales, while power generation companies made up nearly all the remaining share. For the past decade, power generation has increasingly required a larger share of Korea's natural gas supply. The Korean government predicts overall natural gas demand to grow about 1.7% annually until 2035 according to its proposed long-term energy plan, as the fuel remains a significant source of cleaner energy for the country.



Sector organization

Korea Gas Corporation (KOGAS) dominates South Korea's gas sector, and the company is the largest single LNG importer in the world. In spite of recent efforts by the government to liberalize the LNG import market and allow other local importers to resell their LNG cargoes, KOGAS maintains an effective monopoly over the purchase, import, and wholesale distribution of natural gas. In addition to operating three of Korea's four LNG receiving terminals, KOGAS owns and operates the 2,213-mile national pipeline network as of 2013, and sells regasified LNG to power generation companies and private gas distribution companies. The company intends to add another 469 miles of pipeline by 2016.

The Korean central government is the largest KOGAS shareholder with 26.9% direct equity, and an additional indirect 24.5% share via the Korean Electric Power Company (KEPCO). Korea has more than 30 private distribution companies, but each company has exclusive sales rights within a particular region. These local companies purchase wholesale gas from KOGAS at a government-approved price, and sell gas to end-users.

In the upstream, KOGAS has historically focused primarily on overseas LNG liquefaction projects, while the KNOC has handled most exploration and production-related activities. However, as KOGAS seeks new opportunities for growth, its focus on overseas upstream activities is increasing.

Exploration and production

South Korea produced about 37 Bcf of natural gas (about 2% of consumption) in 2012 from the domestic gas field Donghae-1 in the Ulleung Basin. KNOC will continue production operations until 2018, when the project will be converted to an offshore storage facility. KNOC and Woodside Energy (Australia) are jointly exploring deepwater blocks of the Ulleung Basin and began drilling in 2012. State-owned Gas Hydrate Research & Development is conducting studies of deposits of methane hydrates (methane trapped in high-pressure ice deposits on the sea floor) in the Sea of Japan, and the government is currently spending about $30 million per year on research and development. Although extracting this resource is technically challenging and requires high investment levels, Japan's successful extraction of gas from methane hydrates in early 2013 marks a breakthrough in the resource's viability.

As part of the effort to develop into a global integrated energy company, KOGAS has participated in 28 projects, 15 of which were either solely E&P projects in 17 countries as of 2013. South Korea holds equity shares in four production-stage projects, namely 50% in Canada's Encana project, 3% in Qatar's RasGas project, 8.9% in Yemen's YLNG project, and 1.2% in Oman's LNG project. It is KOGAS' mid-term goal to secure 25% of gas imports from equity production sources by 2017. Meanwhile, both KNOC and KOGAS have recently announced intentions to divest certain assets as a result of mounting debt levels, cost overruns at certain overseas projects, and pressure from the Korean government to reduce expenditures. These debt levels may slow future overseas purchases.

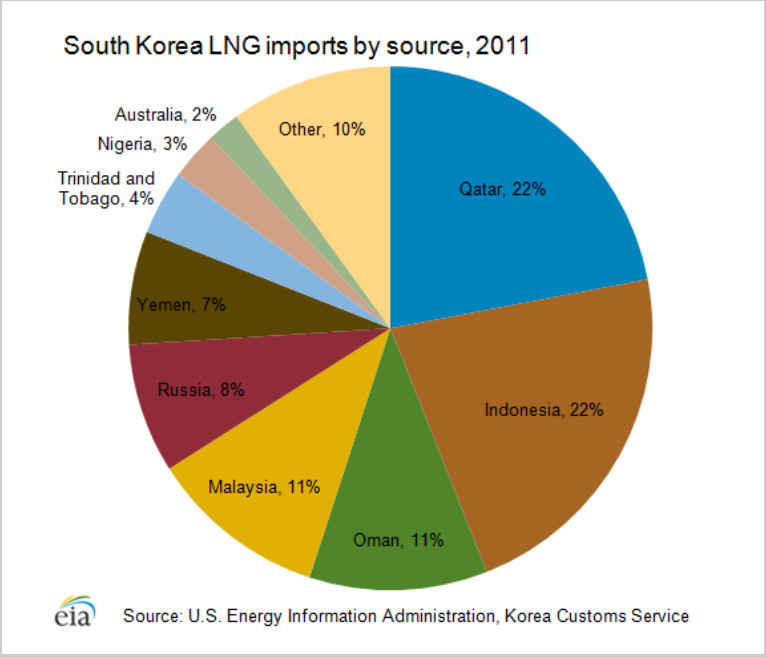
Liquefied natural gas

South Korea has four LNG regasification facilities, with a total capacity of 4.5 Tcf per year,

according to IHS Global Insight. KOGAS operates three of these facilities (Pyongtaek, Incheon, and Tong-Yeong), accounting for about 95% of current capacity. Pohang Iron and Steel Corporation (POSCO) and Mitsubishi Japan jointly own the only private regasification facility in Korea, located on the Southern Coast in Gwangyang. In 2013, South Korea imported nearly 2 Tcf of LNG, which was about 17% of the global LNG trade, according to PFC Energy.

KOGAS purchases most of its LNG through long-term supply contracts, and the company uses spot cargos primarily to correct small market imbalances. More than two-thirds of 2013 LNG imports came from Qatar, Indonesia, Malaysia, and Oman. Indonesia was South Korea's first source of LNG and supplied more than half of South Korea's LNG imports before 2000. As South Korea diversified its LNG imports in the past 15 years to secure more gas to meet its growing demand, Indonesia lost some market share to countries like Qatar, Oman, and Nigeria. South Korea continues to diversify its sources and to take advantage of new gas developments in Australia, the United States, and the Middle East. KOGAS has signed several short-term gas import agreements for LNG supply from various sources. Also, the company is taking advantage of the shale gas developments in North America and new gas plays in Australia. KOGAS plans to import gas from the Sabine Pass liquefaction terminal in the Gulf Coast of the United States for 20 years starting in 2017 and import gas from new liquefaction projects such as Prelude LNG and Gladstone LNG coming online in Australia in the next few years.

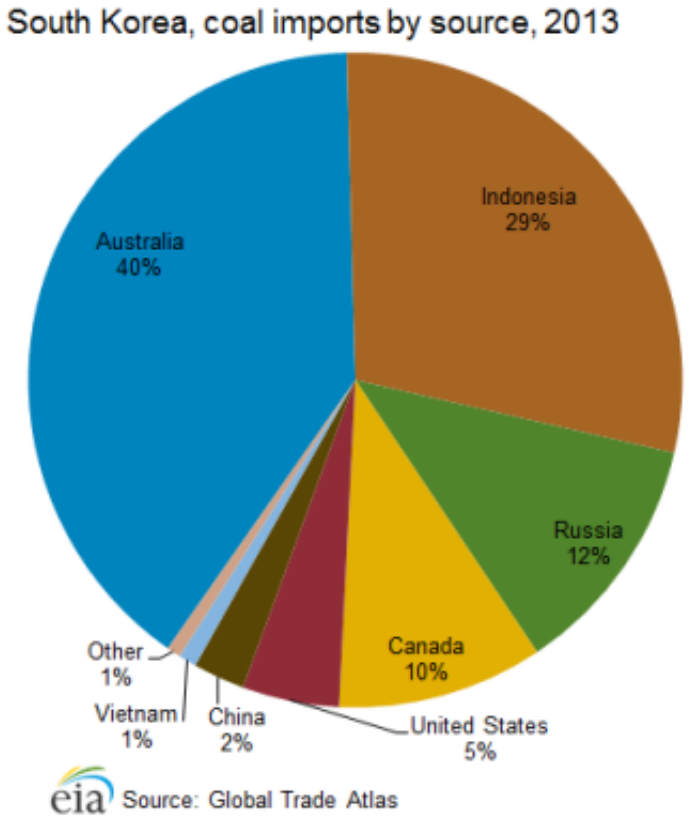
South Korea has added nearly an additional 1 Tcf of regasification capacity since 2010. In addition to recent expansion of existing facilities, KOGAS is planning a new 145 Bcf per year regasification facility at Boryeong, which is under construction and slated to become operational in 2016. KOGAS is currently constructing a new LNG receiving facility at Samcheok, on the Northwest coast. The terminal, with a capacity of 400 Bcf per year, is slated for completion in 2015, and supplies will likely be met primarily through gas imported from Vladivostok, Russia. Although the associated 2008 KOGAS-Gazprom Memorandum of Understanding indicated that the gas could be imported either as LNG or pipeline gas from Vladivostok, Russian and Korean leaders have continued to discuss the economic and political viability of a pipeline that would traverse North Korea.

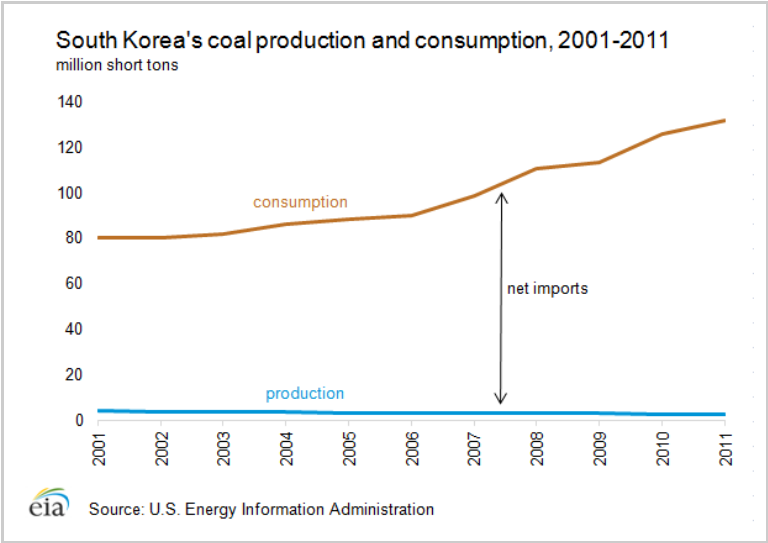


Coal

Rising coal consumption in South Korea and a negligible production level have caused the country to rely heavily on imports over the past several years.

South Korea held only 139 million short tons (MMst) of recoverable coal reserves in 2010, according to the World Energy Council estimates. The country's coal production of 2.3 MMst was a fraction of its 136 MMst consumption in 2012. As a result, South Korea is the fourth-largest importer of coal in the world, following China, Japan, and India. Australia and Indonesia account for the majority of South Korea's coal imports, with Russia being a significant source as well. Coal consumption in South Korea increased by 55% between 2005 and 2012, driven primarily by growing demand from the electric power sector. The electric power sector accounts for 62% of the country's coal consumption, while the industrial sector accounts for most of the remaining amount, according to KEEI.

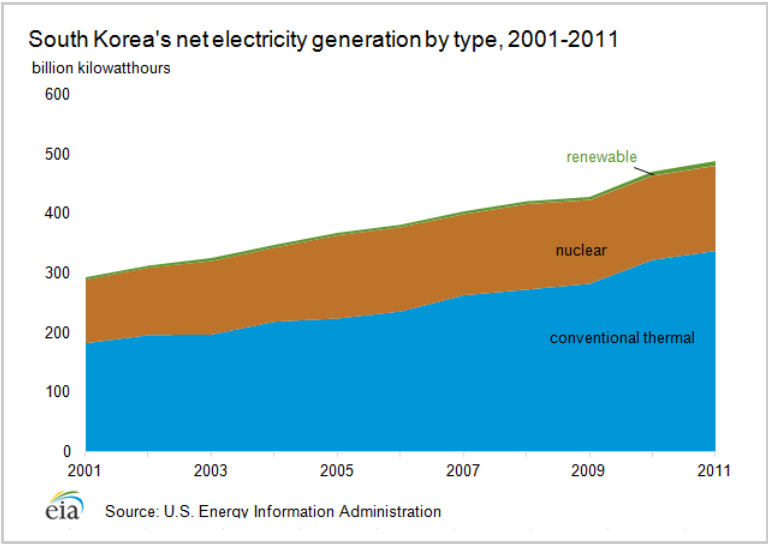




Electricity

Fossil fuel sources account for more than two-thirds of South Korea's electricity generation.

South Korea generated about 495 billion kilowatthours (kWh) of net electricity in 2012. South Korea's power generation has increased by an average of 5% annually over the past decade, and KEEI expects demand to grow 3.7% annually through 2017, primarily driven by industrial use. Fossil fuels accounted for 70% of total 2012 generation, while 29% came from nuclear power, and nearly 2% came from renewable sources, including hydroelectricity. Coal generation makes up the bulk of fossil fuel generation. Although fossil fuel-fired capacity is dominant in South Korea at present, nuclear power is set to expand over the next decade, along with significant investment in offshore wind farms and other renewable sources such as solar and tidal power. In 2012, about 53% of electricity consumption came from industries, 25% from commercial and service enterprises, 14% from the residential sector, and 8% from other sectors like transportation and agriculture, according to KEEI.



Sector organization

The state-owned Korea Electric Power Corporation (KEPCO) controls all aspects of

electricity generation, retail, transmission, and distribution. In 2001, KEPCO's generation assets were spun off into six separate subsidiary power generation companies. Although the initial restructuring included plans to subsequently divest KEPCO of these generation companies (excluding the Korea Hydro & Nuclear Power Company), KEPCO still owns each of the subsidiaries. KEPCO also owns majority shares of KEPCO Engineering and Construction, Korea Nuclear Fuel, Korea Plant Service and Engineering, and Korea Electric Power Data Network.

The Korea Electric Power Exchange (KPX), also established in 2001 as part of the electricity sector reform efforts, serves as the system operator and coordinates the wholesale electric power market. KEPCO continues to act as the electricity retailer, and it controls transmission and distribution.

KPX regulates the cost-based bidding-pool market and determines prices sold between generators and the KEPCO grid. An electricity tariff pricing system, designed to protect low-income residents and industrial consumers, historically has not reflected the true costs of generation and distribution, and has not provided incentives to conserve electricity. MKE must approve all changes in end-use electricity prices. End-user consumer prices remain far below the levels of other economically developed countries, which has contributed to high overall electricity demand and power shortages during peak seasons over the past five years.

MKE announced plans in 2010 to raise electricity tariffs and link them more closely with the rising costs of fuel inputs, although rate hikes have been infrequent. The government is attempting to address power shortages, curb high electricity demand, and encourage energy efficiency by raising South Korea's electricity prices which are low compared to rates in other developed countries. However, there is public opposition from industries and other end-users that are affected by higher prices. MKE last raised prices in November 2013 by an average 5.4%, following a 4% increase in January 2013.

According to KEEI, reserve ratios, or the ratio of peak capacity to peak electricity demand, have fallen below 10% on an annual basis since 2006 and have been as low as 3.8% in peak demand months and 5% overall in 2012. These low margins are a result of delays in installed capacity additions, high peak demand during certain years as a result of weather, and insufficient investment in renewable energy and energy efficiency projects until recently.

Generation structure

A majority of South Korea's installed generation capacity is fossil fuel-based, although nuclear power has played a significant role in the past decade. Baseload generation stems mainly from coal and nuclear power, while peak demand is generally met by the country's LNG imports. According to KEPCO, Korea's capacity at the end of 2012 was 81.9 gigawatts (GW) with coal, natural gas, and nuclear generation making up about 30%, 25%, and 25%, respectively, of the total capacity, with oil, hydroelectricity, and other renewables consisting of smaller shares. South Korea intends to address its issues of chronic power shortages and low reserve margins primarily by installing power plants over the next several years. The government's proposed long-term electricity plan (2013-27) intends to expand capacity to raise reserve margins to 22% by 2027.

Fossil fuel-fired plants make up a significant portion of the country's installed capacity, of which coal plants consisted of about 24.5 GW, or about 30% of the total capacity. According

to the proposed new electricity plan, the country plans to raise coal capacity to 44.9 GW by 2027. By the end of 2017, the government plans to install 15 more coal-fired facilities with 12.5 GW of capacity. For the first time in 30 years, the government approved private companies to construct coal-fired power plants to help facilitate expansion. Natural gas-fired power plants are also set to contribute more to electricity generation, and the government has approved 6 additional gas-fired facilities with over 5 GW of capacity by 2027. Currently, natural gas competes with less expensive coal and nuclear sources of power, and the future power generation portfolio depends on fuel costs, the government's nuclear capacity designs, and the level of investment in power capacity.

South Korea has the fifth-highest nuclear generation capacity in the world. Its first nuclear plant was completed in 1978, and over the following three decades, South Korea directed significant resources towards developing its nuclear power industry. South Korea imports all of the uranium needed to fuel its nuclear power plants and does not reprocess or enrich uranium as a result of a 30-year nuclear cooperation agreement with the United States.

Nuclear generation utilization rates in South Korea are typically over 95%, and the fuel serves as a baseload source for power generation. Korea Hydro & Nuclear Power Co. currently operates South Korea's four nuclear power stations containing 23 individual reactors with a power generation capacity of 20.7 GW. Eleven additional reactors are scheduled for completion by 2024, and five reactors with 6.8 GW of capacity are already under construction. Three of these reactors are scheduled to come online in 2014, followed by two more before 2020.

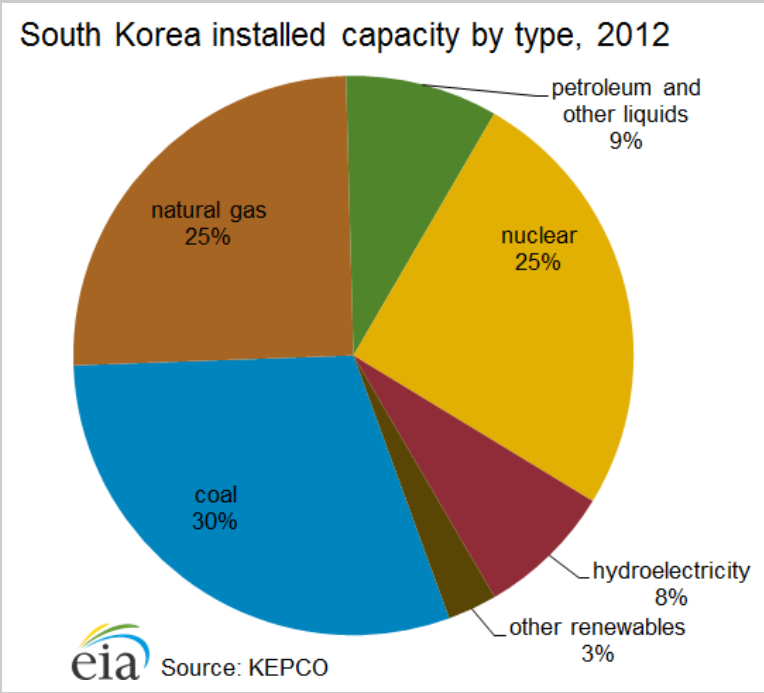
The government's goal in its Fifth Basic Plan for Long-Term Electricity Supply and Demand (2011-24), finalized at the end of 2010, is to generate nearly half of the power supply from nuclear sources by 2024. This target could shift in the upcoming Sixth Basic Power Plan in light of the recent events that shut down some nuclear facilities and public sentiment against relying heavily on nuclear power generation in South Korea.

In late 2012, South Korea experienced several incidents of falsified certificates for components of some of its existing nuclear power plants, adding to the industry's distress following neighboring Japan's Fukushima nuclear disaster in 2011. The Korean government shut down four reactors temporarily, and another six were offline for maintenance, removing up to 40% of the nuclear capacity from service until the government inspected all reactors. The current draft proposal of the country's long-term energy plan, submitted to the Korean parliament at the end of 2013, revised down the share of nuclear capacity to 29% of total generating capacity by 2035 from the prior 41% by 2030, specified in the previous plan.

South Korea is emerging as an international leader in nuclear technology and is pursuing opportunities to export its technologies. In December 2009, KEPCO won a $20 billion contract to build four 1.4 GW nuclear reactors in the United Arab Emirates, the first of which is expected to become operational by 2017.

South Korea plans to promote renewable energy to try reducing its carbon dioxide emissions by 30% from business-as-usual projected levels (projections of emission levels absent any carbon price scheme) in 2020. A renewable portfolio standard for South Korea became effective in 2012 with a beginning renewable electricity quota of 2% of total generation for larger generators, rising to 10% in 2022. Renewable sources remain a small share of South Korea's electricity generation, with hydropower limited to small dams on the

Han River, and a 1 GW pumped-storage facility at Yangyang, 120 miles from the capital of Seoul. The Korean government plans to invest $8.2 billion into offshore wind farms to reach a wind capacity of 2.5 GW by 2019, from only 0.4 GW in 2012. The country is also promoting solar and tidal projects as part of the country's green growth strategy to reduce reliance on fossil fuel imports. Overall, the government plans to increase generation from renewable energy sources from the current 2% to 12% of total consumption by 2027.



Notes

- Data presented in the text are the most recent available as of April 1, 2014.
- Data are EIA estimates unless otherwise noted.

Sources

- Bloomberg
- The Economist Intelligence Unit
- FACTS Global Energy
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